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Tajima et al.

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(54) **TAPE CARRIER PACKAGE AND DISPLAY
DEVICE USING THE SAME**

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(51) **Int. Cl.⁷** **G02F 1/1345**

(52) **U.S. Cl.** **349/150; 361/749**
(58) **Field of Search** 349/149, 150,
349/151, 152; 361/749; 174/254

(56) References Cited

FOREIGN PATENT DOCUMENTS

JP 06-202132 * 7/1994

* cited by examiner

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(57) **ABSTRACT**

A tape carrier package is provided, which includes: a line provided on one surface of a tape substrate; and a semiconductor chip mounted on an other surface of the tape substrate, the semiconductor chip having an electrode which is electrically connected to the line. The line extends from one end to an opposite end of the tape substrate and includes a connection where an intermediate line portion provided in a middle between the ends is electrically connected to the electrode.

21 Claims, 27 Drawing Sheets

